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Exploring physical literacy in health care

Prof. Alexandre Mouton





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Future directions



Born and raised in Liège, Belgium

- Master and Phd in Physical Education
- Professorship at Liège University





PETE

Physical education
didactics



PA Promotion

Encourage an active
lifestyle across lifespan



Physical Literacy

From school to health
context

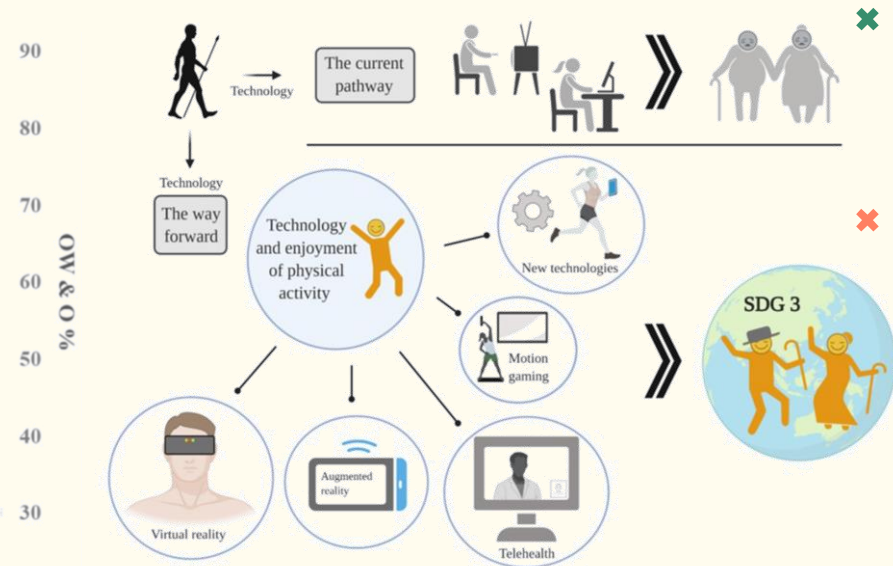
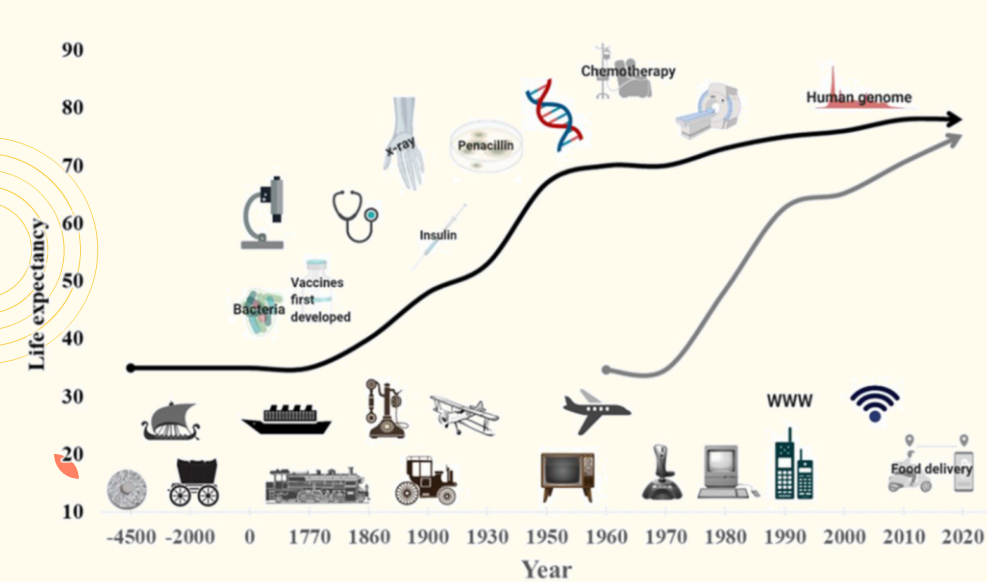


01

Physical Literacy origins

Why is a paradigm shift needed?

Physical in-activity across...history



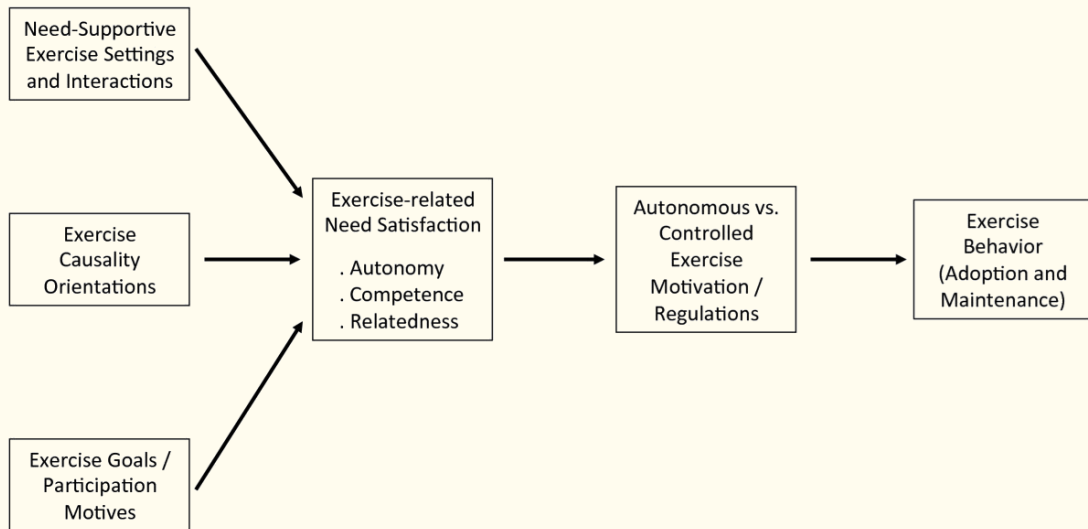
Behavior change & Physical Activity...



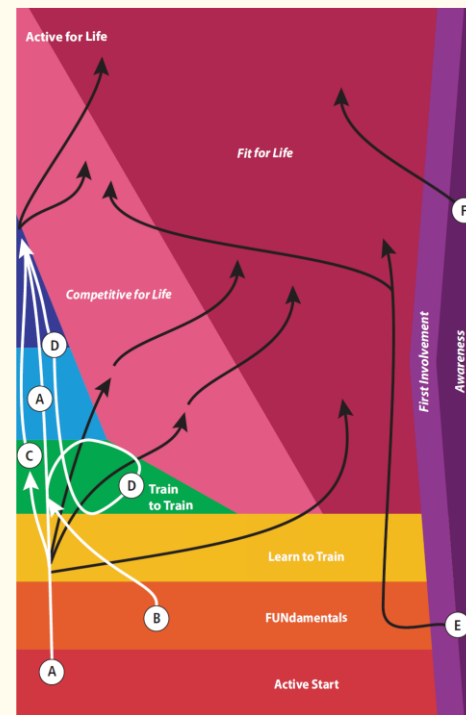
Transtheoretical Model
(Prochaska & Velicer, 1997))

Self-Determination Theory for Physical Activity (Ryan & Deci, 2009)

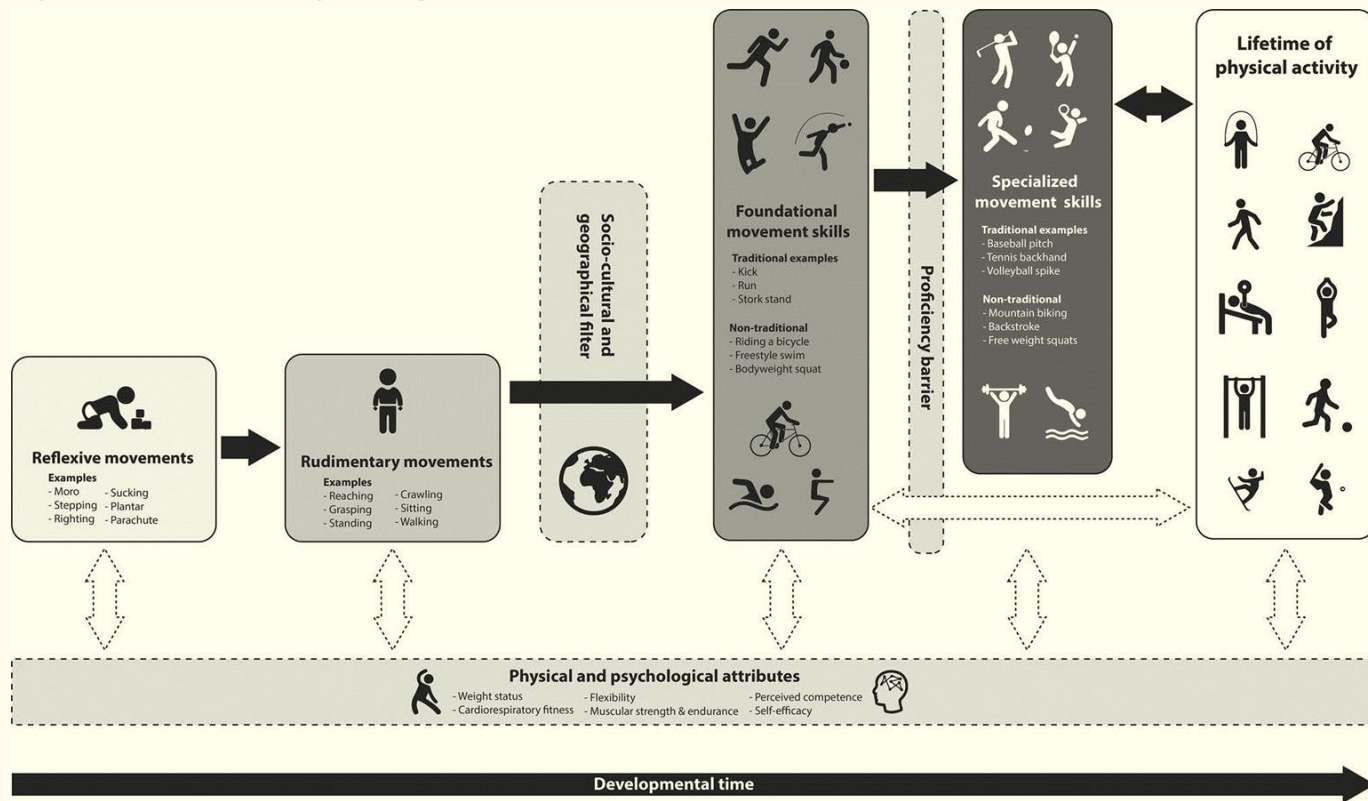
...An unique pathway?



Self-Determination Theory for Physical Activity (Ryan & Deci, 2009)



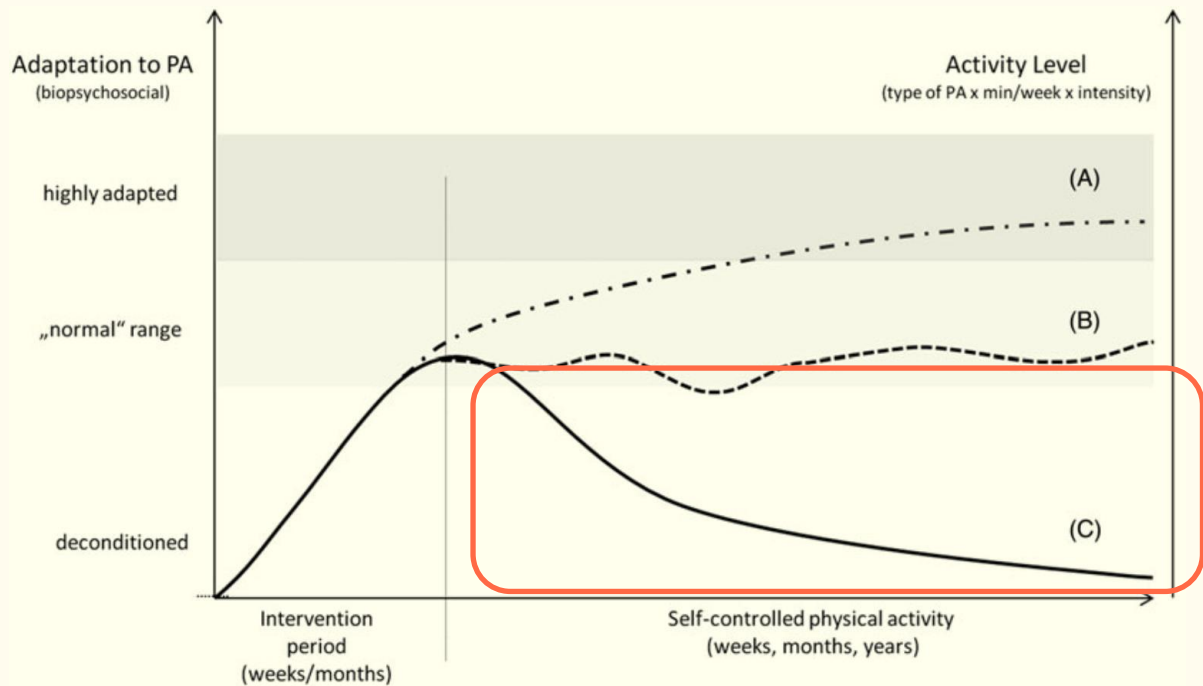
Physical Literacy origins



Development of foundational movement skills for physical activity across the lifespan

Hulteen et al. (2018)

Physical Literacy origins



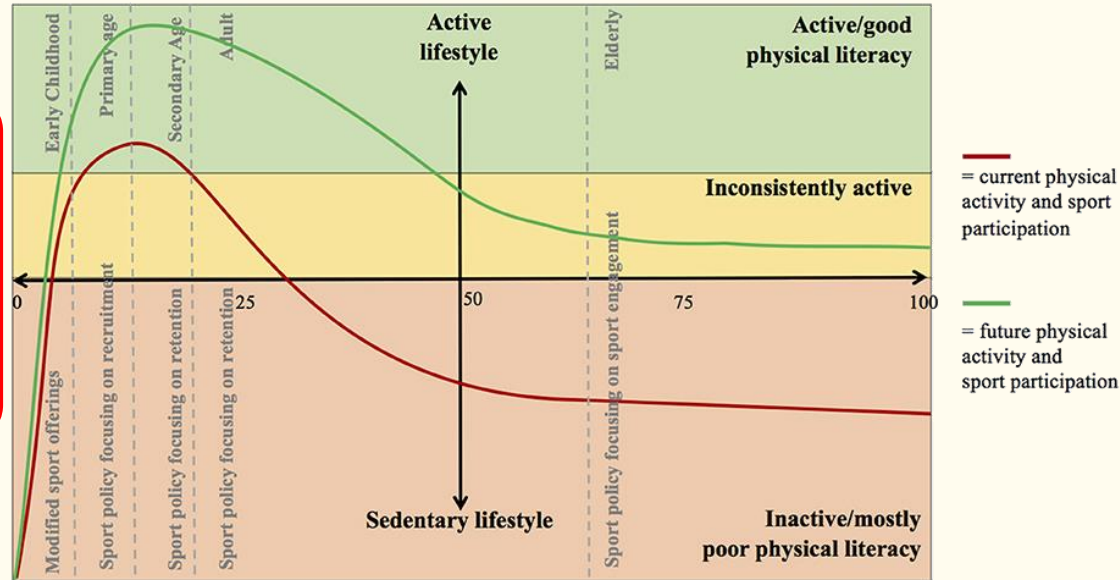
Adaptations to short-term exercise interventions and their post-intervention progression

Geidl, Pfeifer & Semrau (2014)

Physical Literacy origins

Developing physical literacy through parental role modelling, physical education and active engagement with the world

- Physical
- Psychological
- Cognitive
- Social



Early life stage focus: fundamental movement skill development, frequent play and movement experiences that are fun as a preventative approach to physical inactivity and way into sport

Mid life stage focus: fundamental movement mastery and skill transition and maintenance ensuring a physically active lifestyle and opportunity to play sport

Late life stage focus: fundamental movement skill maintenance and adaptation as a preventative and curative approach to physical inactivity and maintaining involvement in sport (clubs)

Physical Activity and Sport Participation (PASP) framework

Westerbeek & Eime (2021)

Ongoing limits of PA/exercise promotion

Accessibility & Inequality

Accessibility to health services limited for low SES

Motivation/Behavior change foundations

Exercising, short-term physical improvement centered programs



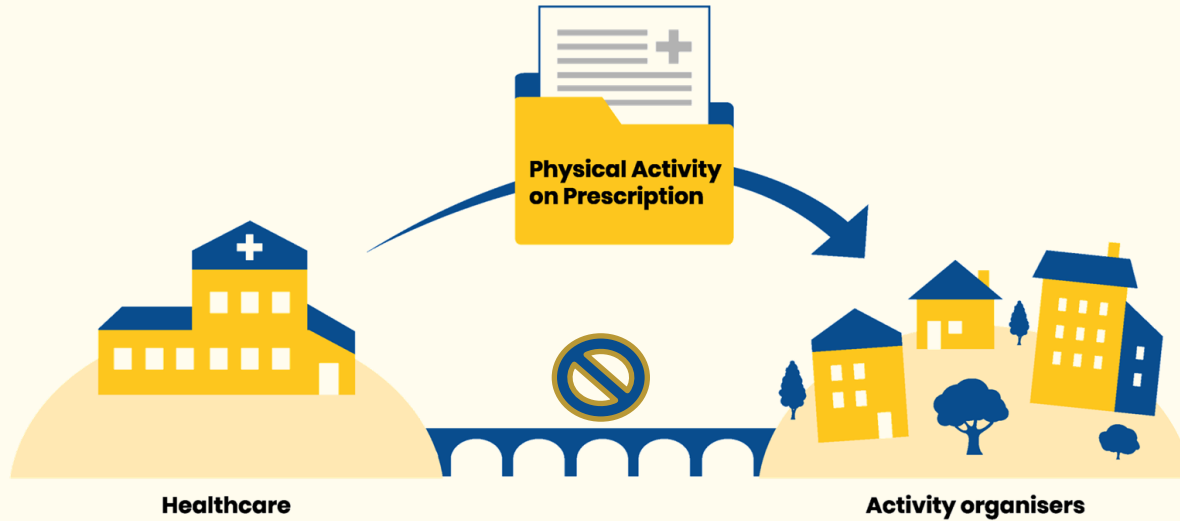
One-Size-Fits-All Approaches

Lack of time, knowledge, referral for PA in health care professionals

Hospital vs community-centered approach

Lack of ecological perspective on participants' PA

*Powell et al. (2006); Bauman et al. (2016);
Kahn et al. (2002); Moschny et al. (2011)*



Missing bridge between healthcare and autonomous physical activity

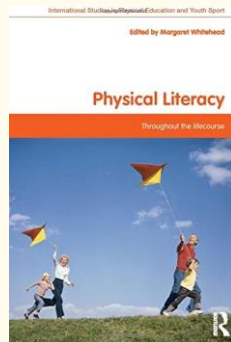
01

Physical Literacy origins

What is Why Physical Literacy?

“Motivation, confidence, physical competence, knowledge, and understanding to value and take responsibility for engagement in physical activities for life”

International Physical Literacy Association (2017), inspired from Whitehead (2001)



Physical Literacy



1 Core

Focused on the inherent potential of all humans to learn through physical interaction with the environment



2 Constitution

Based on integrated development spanning the four of physical, psychological, cognitive, and social learning domains



3 Importance

Helps a person to learn more about the world, become more capable, and ultimately pursue a range of fulfilling activities, as well as the known benefits to health associated with PA

4 Aspiration

Describe possible configurations, becomes self-perpetuating, such that the individual persists with PA, and/or reengages following interruptions such as injury, or significant life events



Physical Literacy origins



Physical domain

The skills and fitness a person acquires and applies through movement.



Psychological domain

The attitudes and emotions a person has towards movement and the impact these have on their confidence and motivation to move.



Social domain

A person's interaction with others and the environment.

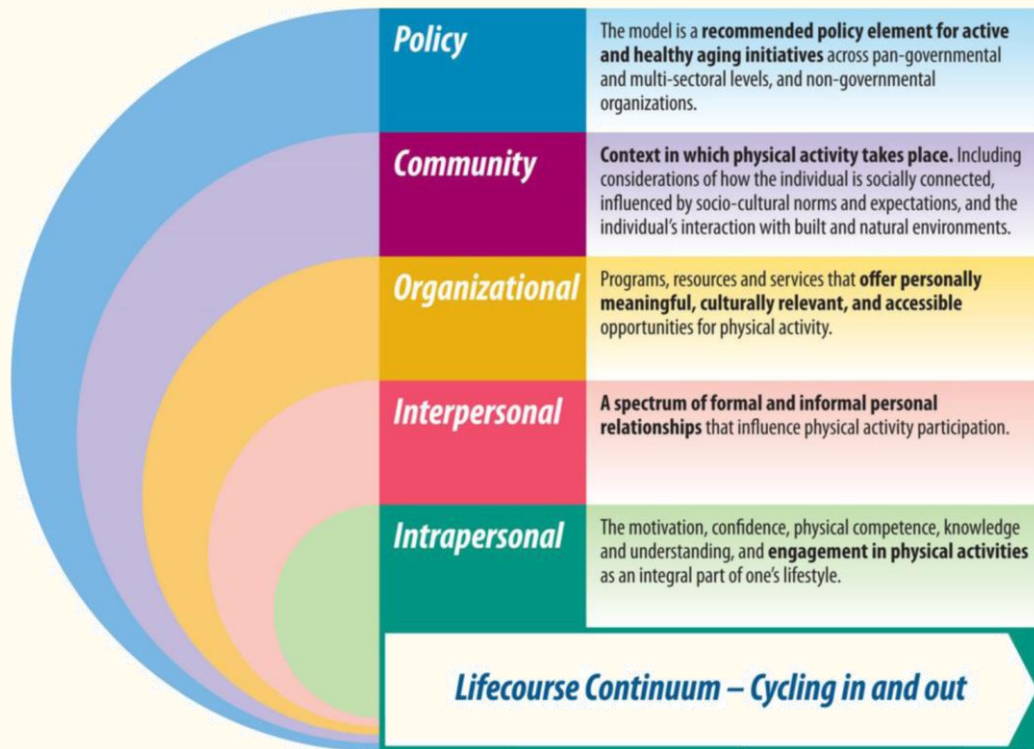


Cognitive domain

A person's understanding of how, why and when the move.

Movement skills (Land)	Stability / balance	Motivation	Ethics	Awareness
Movement skills (Water)	Flexibility	Self-regulation (Emotions)	Relationships	Content knowledge
Movement using equipment	Agility	Self-regulation (Physical)	Collaboration	Rules
Object manipulation	Strength	Self-awareness	Safety & risk	Purpose & reasoning
Cardiovascular endurance	Reaction time	Confidence	Society & culture	Strategy & planning
Muscular endurance	Speed	Engagement & enjoyment	Connectedness (Community & environment)	Tactics
Coordination	Power			

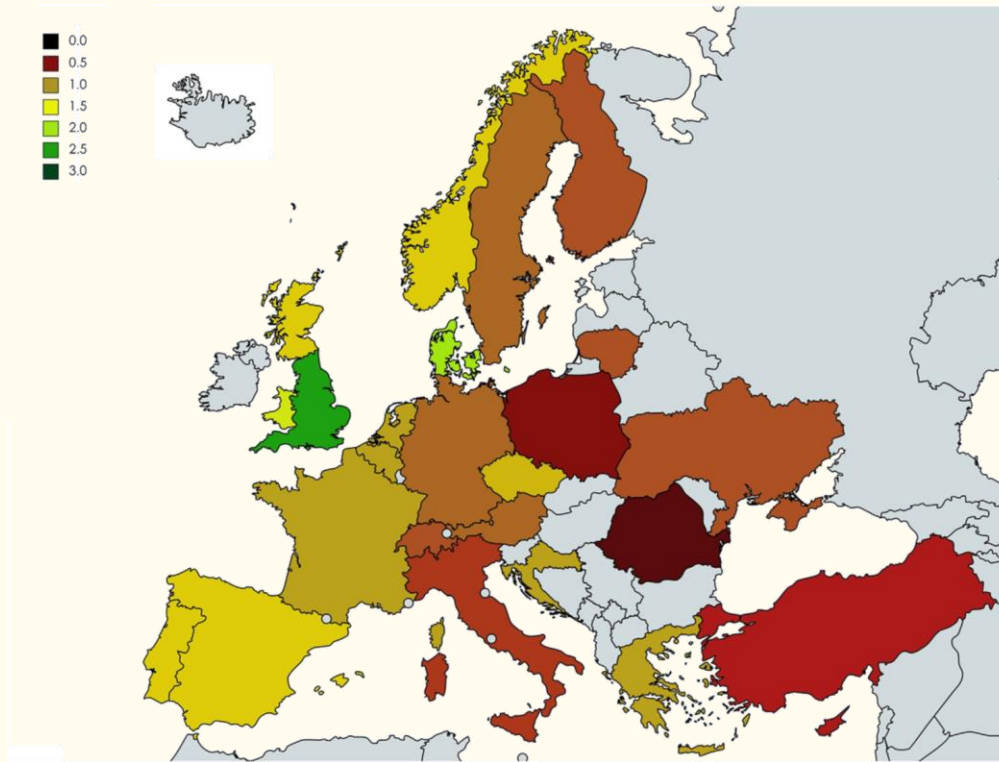
Physical Literacy origins



Physical Literacy Model for Older Adults with an Ecological Approach

Jones et al. (2018)

Physical Literacy origins



Physical Literacy implementation in Europe

Carl, ..., Mouton, et al. (2023a)

Why explore and expand Physical Literacy research and practice in Health?

Physical Literacy in health care

Health Benefits of Physical Activity

FOR ADULTS 65 AND OLDER



IMMEDIATE

A single bout of moderate-to-vigorous physical activity provides immediate benefits for your health.

Sleep
Improves sleep quality



Brain Health

Reduces risks of developing dementia (including Alzheimer's disease) and reduces risk of depression



Heart Health

Lowers risk of heart disease, stroke, and type 2 diabetes



Cancer Prevention

Lowers risk of eight cancers: bladder, breast, colon, endometrium, esophagus, kidney, lung, and stomach



Healthy Weight

Reduces risk of weight gain



Independent Living

Helps people live independently longer



Bone Strength

Improves bone health



Balance and Coordination

Reduces risks of falls

Emerging research suggests physical activity may also help boost immune function.

Nieman, "The Compelling Link," 201-217.
Jones, "Exercise, Immunity, and Illness," 317-344.



Source: Physical Activity Guidelines for Americans, 2nd edition

To learn more, visit: <https://www.cdc.gov/physicalactivity/basics/adults/health-benefits-of-physical-activity.html>

June 2023

BARRIERS TO PHYSICAL ACTIVITY FOR ADULTS WITH ARTHRITIS

41% of people with arthritis are inactive, due in large part to 4 barriers:



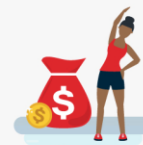
1 PHYSICAL
(pain and fatigue)



2 PSYCHOLOGICAL (lack of motivation and fear of pain)



3 SOCIAL (lack of a support system)



4 ENVIRONMENTAL (costly fees, no transportation and lack of access to safe places to exercise)

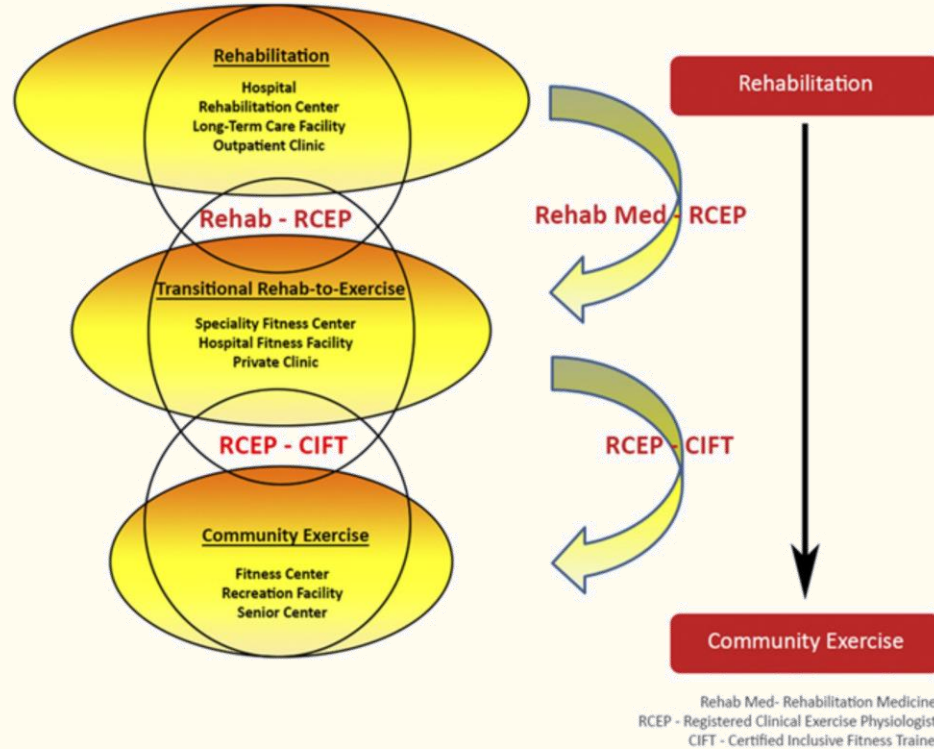
Learn more

Visit- <https://oaction.unc.edu>

One of the “blank spots”

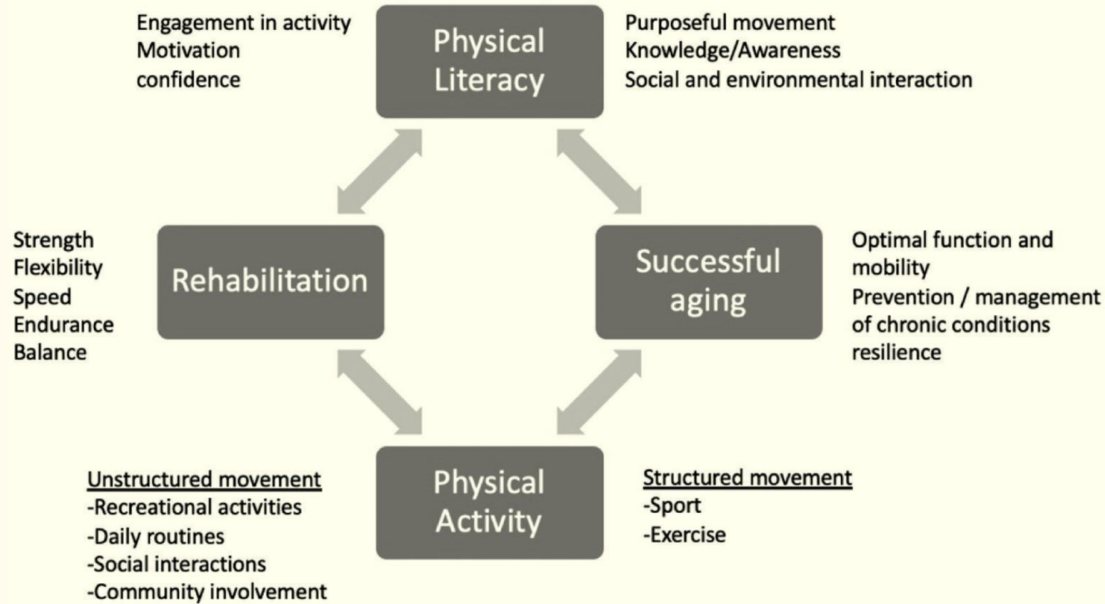
- Most physical literacy research is focused on children, few in adults, almost none in older adults and chronic disease populations
- Health care practitioners are not yet engaged with the construct of physical literacy in practice
- Greater emphasis is placed on the physical domain of physical literacy, leaving the remaining domains (affective, cognitive, and behavioural) underrepresented/understudied
- There is evidence to support a relationship between the physical domain of physical literacy and improved health outcomes, but evidence is missing in specific populations

Cornish et al. (2020)
Carl et al. (2023b)



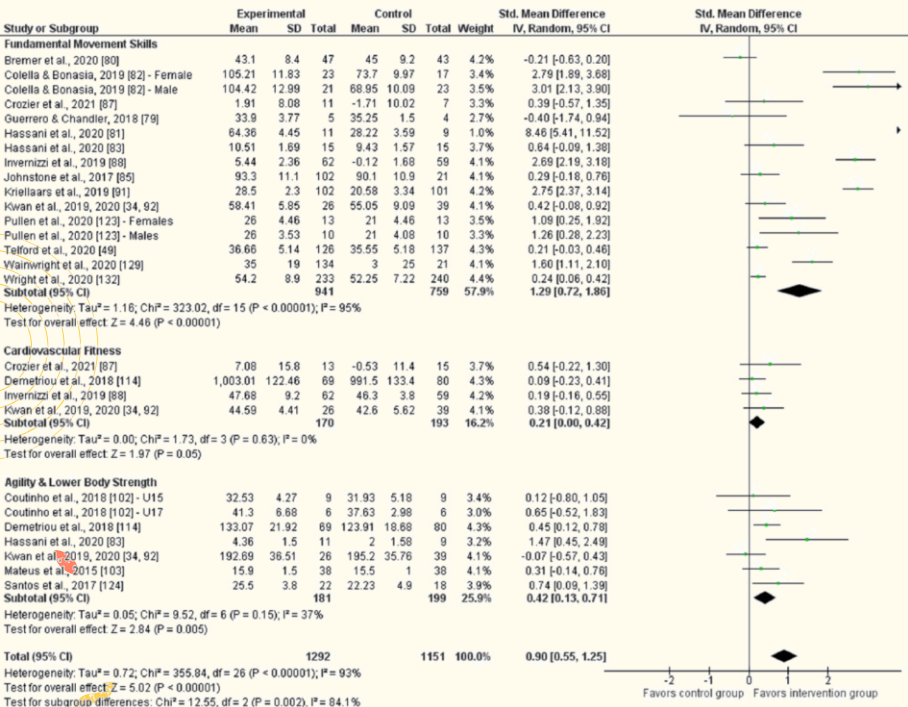
Transitional model from rehabilitation to community exercise

Rimmer (2012)

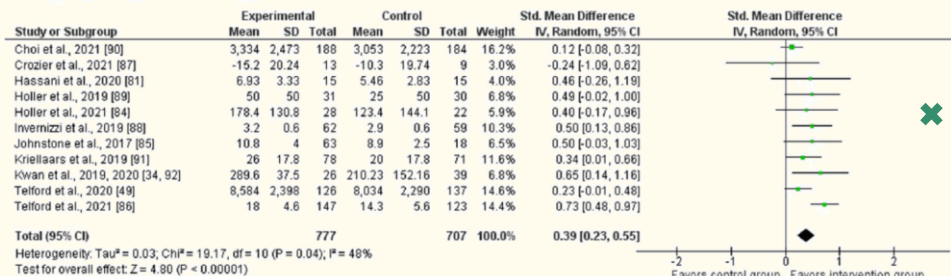


Physical literacy for adults through a rehabilitation lens

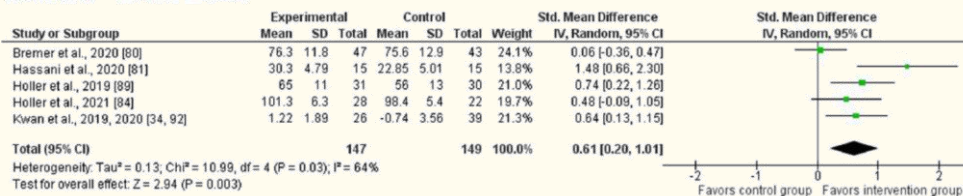
Petrusevski et al. (2022)



Category "Physical Activity Behavior"



Category "Total PL Score"



First evidence for physical literacy interventions effects

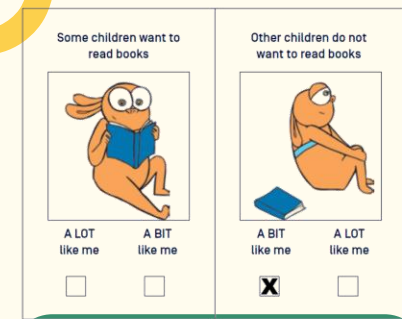
How do we assess Physical Literacy?

Validity, Reliability, and Feasibility of Physical Literacy Assessments Designed for School Children: A Systematic Review

Lisa M. Barnett^{1,8} · Alethea Jerebine^{2,3} · Richard Keegan⁴ · Kimberley Watson-Mackie² ·
Lauren Arundell^{1,5} · Nicola D. Ridgers^{1,6} · Jo Salmon^{1,5} · Dean Dudley⁷

Physical literacy assessment in adults: A systematic review

Aia Boldovskaia^{1*}, Nuno Manuel Gonçalves Dias¹, Marlene N. Silva^{1,2},
Eliana V. Carraça¹



14 instruments

Items

1. I can turn doing sports into an on-going habit of life
2. I have a mindset for lifelong sports
3. I am willing to do sports for better health
4. I am aware of the benefits of sports related to health
5. I establish friendship through sports
6. I possess adequate fundamental movement skills
7. I am physically fit, in accordance to my age
8. I am able to apply PE knowledge in the long run
9. I am able to apply learnt motor skills to other physical activities
10. I have strong social skills
11. I have strong communication skills

Note: the Cronbach's alpha for this scale was 0.90.

1 new instrument: PPLQ

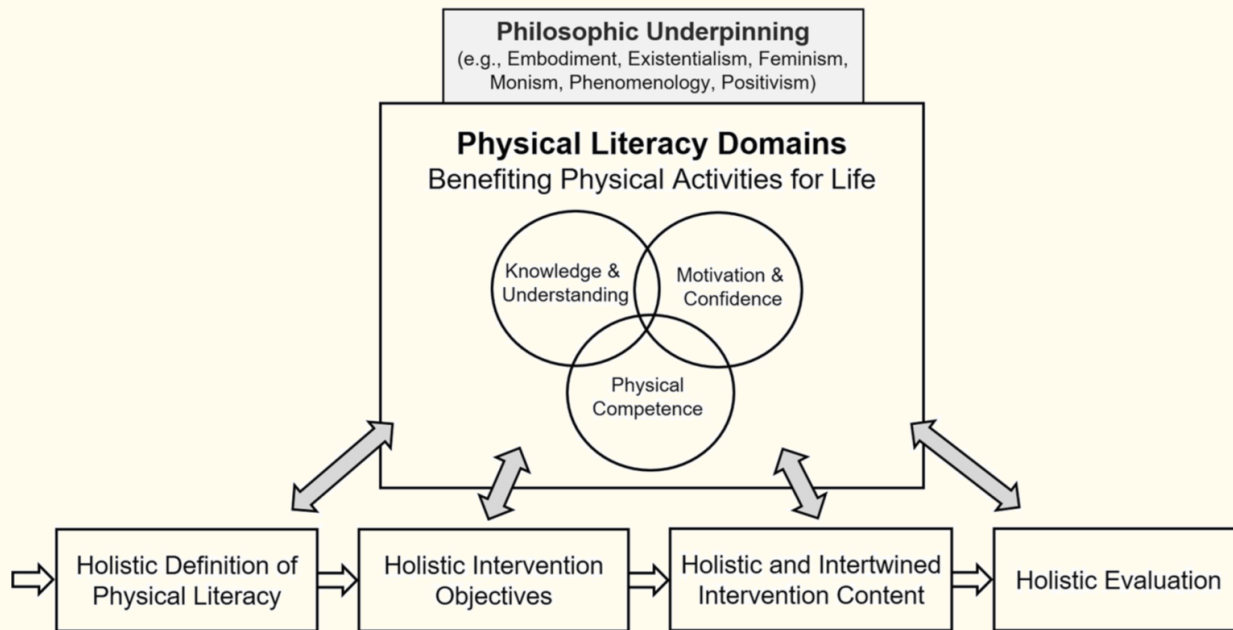
Description of the meaning of each domain of PPLQ version 5 (i.e., 24-item version).

Domain	Meaning
Physical competence	Refers to a person's perception of his/her own fitness and ability to perform various strength and endurance related physical activities.
Understanding	Refers to a person's grasp of the value of physical activity for lifelong health and well-being.
Motivation	Refers to a person's inherent satisfaction and pleasure to engage in regular physical activity.
Confidence	Refers to a person's situational belief in his/her capabilities to adopt and maintain a physically active lifestyle.
Knowledge	Refers to a person's knowledge of health-enhancing physical activities and how to perform them. In addition, this refers to a person's knowledge of the health benefits of being physically active.
Physical activity behavior	Refers to the extent in which a person performs moderate to vigorous physical activity of all types.

Holler et al. (2023)

→ Only self-reported assessment

How to integrate Physical Literacy in health interventions?



Physical Literacy Interventions Reporting Template

Carl et al. (2023c)

Session	Main focus	Main goal	Theory-content link			
			Physical domain	Cognitive domain	Psychological (affective) domain	Social domain
1	Evaluation: Pretest	Self-evaluation, enabling PL charting	Mixed rule-based games focusing object control	Content knowledge: Reasons for evaluation	Self-perception	Fairness, inclusion
2	Cooperative game forms	Strengthen group structure	Game arrangements promoting cooperation and anticipation	Strategy and planning; Participatory development and operation with cooperation strategies	Focusing success experiences with the whole group	Communication; respect; solve team challenges
3	Ball games (Part 1)	Improve object control	Promoting object control (ball), throw, catch, shoot within different individual exercises, and team games	Knowledge about central skills for ball manipulation	Individual progress and confidence in object control	Playing in different ways together and against each other
4	Acrobatics	Experience different acrobatic formations	Individual, pair, and group arrangements focusing on static strength and promoting group balance	Building up a repertoire of basic acrobatic forms; characterizing "physical activity"	Focus on courage, self-awareness, and trust (e.g., in building a pyramid)	Promoting communication, collaboration, and integrity
5	Scuffling	Regulate one's strength	Station run with different tasks (e.g., push, pull, hold) fostering strength and stability	Internalizing rules for scuffling against someone	Self-regulation and proper usage of own strength	Respect towards others, their body, and limits
6	Endurance games	Pacing one's energy sources	Game arrangements challenging individual endurance boundaries	Understanding the pulse, observing its reaction to a sport activity	Volition to maintain the load throughout an entire game; fostering perseverance	Support and cheer up others, relationships
7	Racket sport	Get in touch with different types of racket sport	Exercises focusing basic racket handling (e.g., via hockey, badminton, or tennis rackets), introduction in small games using the rackets	Reasoning: Advantages of (regular) PA	Confidence in handling equipment	Playing in different ways together and against each other
8	Parkour	Development and proper use of movements in the context of parkour	Basics of parkour; jumping, running, and overcoming obstacles; agility exercises	Knowledge about parkour as a lifestyle activity in urban spaces; linking obstacle equipment from indoor use to self-initiated outdoor use	Self-awareness of skills, overcoming obstacles	Respect toward others and their abilities, integrity
9	Dancing	Become acquainted with aesthetic and rhythmic movements	Rhythmic movements, perform aesthetic movements in a group	Knowledge about the variety of dancing; developing dances in accordance with the rhythm	Enjoyment; self-expression through dancing	Development of a group choreography (for communication and collaboration)
10	Ball games (Part 2)	Improve object control	Object control (ball); Exercises focusing the reaction time	Knowledge about different types of coordination	Celebrate progress (Ballgames-1)	Playing in different ways together and against each other
11	Trend sport	Learn something new	Object manipulation: throwing and catching a frisbee	Reasoning: issues of being active every day—discuss solutions	Encouragement and motivation to try something new	Trying something new together, society and culture
12	Conditional abilities	Introduction in different conditional abilities, own strengths	Small team games focusing the range of movements running, throwing, pushing	Introduction in knowledge of different abilities to be physical active	Enjoyment of various movements; focusing individual success experiences	Respect individuality; communication, ethics
13	Free session	Enjoyment; implement own movement ideas	Mixed games and exercises	Reflection of "taking home" messages of the program	Involvement; encouragement	Communication; relationships
14	Evaluation: Posttest	Self-evaluation, promoting PL charting	Mixed rule-based games focusing object control	Changes in PA/sport habits before and after	Self-perception	Respect towards others, fairness

Example of a theory-based PL intervention in school

Carl et al. (2023d)

Pilot intervention in chronic disease participants

APA specialist



40-items PL questionnaire
4 physical tests



Referral

PL
assessment

direct

PL
counselling

+ 2 months

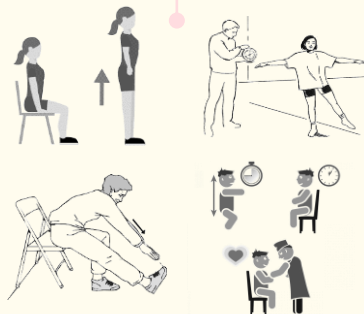
Follow-up
assessment

×

×

Healthcare
professionals

GP, Physio, Psycho, Nurse



Motivational interviewing
technique

Individual goals-oriented

Link with community PA



Pilot intervention in chronic disease participants



n = 108 (71% ♀; 56±15 yrs)



- ✓ Overall PL score ($p < 0,001$)
- ✓ Cognitive score ($p < 0,01$)
- ✓ Physical score ($p < 0,05$)



CITOYEN
en mouvement
pour ma santé



- Increase intervention/follow-up duration
- Enhance communication with HP and community PA
- Include a PL intervention in an APA program

Weerts & Mouton (2023)

https://www.chuliege.be/jcms/c2_26224880/en-mouvement-pour-ma-sante

“Physical literacy is required as a foundation to an active population”...

Westerbeek & Eime, 2021

But there is still an avenue to explore its full potential in research and practice



× **Thank you for your attention**

× Exploring
physical literacy
in health care



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URL LinkedIn

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